

CLAIMS

1. A method for producing a collagen polypeptide, wherein said collagen is selected from the group comprising collagen types IV, V, VI, VII, VIII, IX, X, XI, XII, XIII, XIV, XV, 5 XVI, XVII, XVIII, and XIX, comprising:

a. culturing a host cell, wherein said host cell has been infected, transfected or transformed with (i) a first expression vector comprising a polynucleotide molecule having a nucleic acid sequence which encodes a collagen subunit; and 10 (ii) a second expression vector comprising a polynucleotide molecule having a nucleic acid sequence which encodes at least one collagen post-translational enzyme or subunit thereof; and

b. purifying said collagen polypeptide.

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2. The method of Claim 1 wherein the host cell is selected from the group consisting of a yeast cell, a plant cell, an insect cell and a mammalian cell.

20 3. The method of Claim 1 wherein the host cell is further infected, transfected or transformed with a third expression vector comprising a polynucleotide molecule having a nucleic acid sequence which encodes a second collagen subunit.

25 4. The method of Claim 3 wherein the host cell is further infected, transfected or transformed with a fourth expression vector comprising a polynucleotide molecule having a nucleic acid sequence which encodes a third collagen subunit.

30 5. The method of Claim 1 wherein said collagen post-translational enzyme is selected from the group consisting of prolyl-4-hydroxylase, lysyl oxidase, lysyl hydroxylase, C-proteinase, and N-proteinase.

35 6. The method of Claim 1 wherein the collagen post-translational enzyme subunit is selected from the group

consisting of an alpha subunit of prolyl-4-hydroxylase and a beta subunit of prolyl-4-hydroxylase.

7. A method for producing a procollagen polypeptide,
5 wherein said procollagen is selected from the group comprising collagen types IV, V, VI, VII, VIII, IX, X, XI, XII, XIII, XIV, XV, XVI, XVII, XVIII, and XIX, comprising:

a. culturing a host cell, wherein said host cell has been infected, transfected or transformed with: (i) a first
10 expression vector comprising a polynucleotide molecule having a nucleic acid sequence which encodes a collagen subunit; and (ii) a second expression vector comprising a polynucleotide molecule having a nucleic acid sequence which encodes at least one collagen post-translational enzyme or subunit
15 thereof; and

b. purifying said procollagen polypeptide.

8. The method of Claim 7 wherein the host cell is selected from the group consisting of a yeast cell, a plant
20 cell, an insect cell and a mammalian cell.

9. The method of Claim 7 wherein the host cell is further infected, transfected or transformed with a third expression vector comprising a polynucleotide molecule having a nucleic
25 acid sequence which encodes a second collagen subunit.

10. The method of Claim 9 wherein the host cell is further infected, transfected or transformed with a fourth expression vector comprising a polynucleotide molecule having a nucleic
30 acid sequence which encodes a third collagen subunit.

11. The method of Claim 7 wherein said collagen post-translational enzyme is selected from the group consisting of prolyl-4-hydroxylase, lysyl oxidase and lysyl hydroxylase.

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12. The method of Claim 7 wherein the collagen post-translational enzyme subunit is selected from the group

consisting of an alpha subunit of prolyl-4-hydroxylase and a beta subunit of prolyl-4-hydroxylase.

13. A collagen polypeptide, wherein said collagen is
5 selected from the group comprising collagen types IV, V, VI,
VII, VIII, IX, X, XI, XII, XIII, XIV, XV, XVI, XVII, XVIII,
and XIX, manufactured according to a method comprising:

a. culturing a host cell, wherein said host cell has
been infected, transfected or transformed with: (i) a first
10 expression vector comprising a polynucleotide molecule having
a nucleic acid sequence which encodes a collagen subunit; and
(ii) a second expression vector comprising a polynucleotide
molecule having a nucleic acid sequence which encodes at
least one collagen post-translational enzyme or subunit
15 thereof; and

b. purifying said collagen polypeptide.

14. The collagen polypeptide of Claim 13 wherein the host
cell is selected from the group consisting of a yeast cell, a
20 plant cell, an insect cell and a mammalian cell.

15. The collagen polypeptide of Claim 13 wherein the host
cell is further infected, transfected or transformed with a
third expression vector comprising a polynucleotide molecule
25 having a nucleic acid sequence which encodes a second
collagen subunit.

16. The collagen polypeptide of Claim 15 wherein the host
cell is further infected, transfected or transformed with a
30 fourth expression vector comprising a polynucleotide molecule
having a nucleic acid sequence which encodes a third collagen
subunit.

17. The collagen polypeptide of Claim 13 wherein said
35 collagen post-translational enzyme is selected from the group
consisting of prolyl-4-hydroxylase, lysyl oxidase, lysyl
hydroxylase, C-proteinase, and N-proteinase.

18. The collagen polypeptide of Claim 13 wherein the collagen post-translational enzyme subunit is selected from the group consisting of an alpha subunit of prolyl-4-hydroxylase and a beta subunit of prolyl-4-hydroxylase.

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19. The collagen polypeptide of Claim 13 wherein said polypeptide is not glycosolated.

20. The collagen polypeptide of Claim 13 wherein said
10 polypeptide is partially deglycosolated.

21. A host cell which has been infected, transfected or transformed with: (i) a first expression vector comprising a polynucleotide molecule having a nucleic acid sequence which
15 encodes a collagen subunit; and (ii) a second expression vector comprising a polynucleotide molecule having a nucleic acid sequence which encodes at least one collagen post-translational enzyme or subunit thereof.

20 22. The host cell of Claim 21 wherein said host cell is further infected, transfected or transformed with a third expression vector comprising a second collagen subunit.

23. The host cell of Claim 22 wherein said host cell is
25 further infected, transfected or transformed with a fourth expression vector comprising a third collagen subunit.

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